

REMARKS

Typographical corrections and minor clarifications have been made to the specification. Claims 11, 16 - 20, 23, and 33 have been amended only to correct problems of antecedent basis or minor typographical errors. No new matter has been introduced with these amendments, which are supported in the specification as originally filed. Claims 1- 33 remain in the application.

Drawing corrections are provided herewith for Figs. 1, 5, 6, and 7. These corrections provide additional reference numbers to better align the drawings with their corresponding text. No new matter is being introduced with these corrections.

Applicants wish to note that the paragraph on Page 11, lines 4 - 13 has been amended by deleting an introductory phrase "Although not preferred" and a closing sentence which states that the alternative just described "is more complex to implement and manage, and therefore less desirable". Further study by Applicants has shown that the alternative being described may *not*, in fact, be more complex, and it may *not* be "less desirable". Thus, the amendments to this paragraph are in keeping with Applicants' statutory obligation under 35 U.S.C. §112 to disclose the best mode of practicing their invention.

Attached hereto is a marked-up version of the changes made to the specification and claims by the current amendment. The attached pages are captioned "**Version with Markings to Show Changes Made**". A substitute specification and drawings, in which these changes are reflected, is also being provided herewith.



Respectfully submitted,

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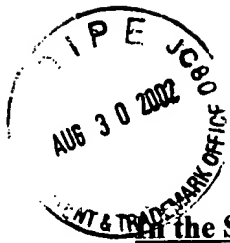
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I hereby certify that this paper and fee are being deposited with the United States Postal Service Express Mail Post Office to Addressee service under 37 CFR §1.10 on the date indicated above and is addressed to the Assistant Commissioner of Patents, Washington, D.C. 20231.

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(Signature of person mailing paper or fee)



VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the Specification:

The paragraph on Page 1, lines 4 - 8 has been amended as follows:

-- This application is co-pending with and claims pursuant to 35 U.S.C. § 120 as to its common subject matter the filing date of patent application serial number 09/637,742, filed August 11, 2000, and patent application serial number 09/657,745, filed September [10] 8, 2000.

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The paragraph on Page 1, lines 11 - 14 has been amended as follows:

-- The invention relates generally to wireless networks, and more particularly to an adapter and method for extending stand-alone wireless access points to enable their delivery of an integrated solution within a network environment. --

The paragraph which begins on Page 1, line 26 and carries over to Page 2, line 10 has been amended as follows:

-- Traditional wireless access points provide limited functionality, essentially limited to enabling a so-called "hotspot" of connectivity to the LAN. The access point operates by forwarding data packets from the wireless environment to the wired LAN, and vice versa. However, within an environment containing multiple access points, conventional stand-alone access points have several limitations. For example, a stand-alone access point: (1) cannot be centrally managed; (2) cannot support layer 3 (IP) roaming with other access points; (3) cannot enforce quality-of-service (QoS) metrics; (4) cannot deliver centralized logging and reporting; and

(5) [provids] provides only limited security and authentication capability, and no server managed security. --

The paragraph on Page 2, lines 11 - 28 has been amended as follows:

-- Existing efforts to address the aforementioned limitations involve the incorporation of new infrastructure into an existing network to provide some of the missing services for the access points. One example of this approach is the combination of a Cisco Aironet 350 access point and a Cisco Secure Access Control Server for delivery of authentication and dynamic encryption key generation services. Another example of this approach is the incorporation of a 3Com SuperStack II switch for delivery of authentication and virtual private networking (VPN) access to wireless users. Such conventional approaches, however, [have significant drawbacks and limitations. For example, these approaches] require one or more of the following: (1) [Mandatory] mandatory software on the client devices (e.g., VPN software); (2) [Particular] particular versions of wireless client hardware or firmware, thereby forcing a homogeneous environment; (3) [Upgrades] upgrades to the existing wireless access points; and (4) [Complex] complex network configurations, since multiple pieces of infrastructure must be separately installed, configured and managed. --

The paragraph which begins on Page 2, line 29 and carries over to Page 3, line 2 has been amended as follows:

-- These requirements make deployment difficult, limit device choice, and do not provide a scalable approach to delivering all of the required services for the access points in an enterprise

network. Accordingly, there is an established need for improvements over [a system overcoming the aforementioned drawbacks and limitations of] prior art wireless access point systems. --

The paragraph on Page 3, lines 10 - 17 has been amended as follows:

-- In a preferred embodiment of the invention, an adapter device is provided connected to each short-range wireless access point in a network. Each packet transmitted between an access point and the wired LAN passes through the adapter. The adapter may be implemented as a stand-alone Personal Computer (PC), a special-purpose computing appliance, or as a component that is physically coupled to the access point, with the component / access point combination encapsulated within a single enclosure. --

The paragraph on Page 4, lines 8 - 10 has been amended as follows:

-- FIG. 4 is a flow chart illustrating a method for forwarding a packet to a wire[-]line interface, in accordance with the present invention; --

The paragraph which begins on Page 4, line 28 and carries over to Page 5, line 8 has been amended as follows:

-- Referring now to FIGS. 1 and 2, one or more adapters 101 are provided connected to corresponding short-range wireless access points 100. In the preferred embodiment of the present invention, adapter 101 has two network interfaces, a wireless network interface and a wireline network interface. The wireless network interface is connected directly to each access point 100, while the wireline network interface is connected directly to a local area network (LAN) 102 or,

alternatively, to a switch/router (not shown in FIG. 1). In this manner, all packets sent between access point 100 and the wired LAN 102 must pass through the adapter 101. --

The paragraph on Page 5, lines 25 - 30 has been amended as follows:

-- In an alternative embodiment of the present invention, adapter 101 functions with an existing wired LAN [102] port, instead of a short-range wireless access point 100. In this case, the adapter's wireline interface 200 [101] is attached to a LAN port (as usual), and a client device or switch can be attached to the adapter's wireless network interface 201 (instead of an access point). --

The paragraph which begins on Page 5, line 31 and carries over to Page 6, line 11 has been amended as follows:

-- [Commonly-owned] Commonly-assigned pending U.S. patent application serial number 09/637,742, filed August 11, 2000, and incorporated herein by reference, which is titled "Enabling Seamless User Mobility in a Short-Range Wireless Networking Environment", discloses a wireless networking system wherein a central core server resides in the network infrastructure and provides services to Handoff Management Points (HMPs) as users of devices roam through the environment. The system of the present invention can be implemented in combination with [the above-identified related] this commonly-assigned invention, wherein the network control server 103 is co-located with the core server or, alternatively, where the network adapters 101 are co-located with the HMPs. This combined configuration enables clients to travel seamlessly between access points that do not directly support coordination through the core server. --

The paragraph on Page 6, lines 12 - 30 has been amended as follows:

-- [Commonly-owned] Commonly-assigned pending U.S. patent application serial number 09/657,745, filed September [10] 8, 2000, and incorporated herein by reference, which is titled "Location-Independent Routing and Secure Access in a Short-Range Wireless Networking Environment", discloses a system wherein a routing coordinator maintains a plurality of connection table records and wherein a plurality of Home Agent Masqueraders (HAMs) and Foreign Agent Masqueraders (FAMs) communicate with the routing coordinator to ensure that client data connections are preserved as the client travels throughout the short-range wireless network environment. Each of the connection table records includes a client address and port, and a server address and port. The system of the present invention can be implemented in combination with [the above-identified related] this commonly-assigned invention, where the network control server 103 is co-located with the routing coordinator or, alternatively, where the network adapters 101 are co-located with the HAMs and FAMs. The combined configuration enables clients to preserve network connections as they travel through a short-range wireless network environment and communicate with access points that do not directly support coordination through the routing coordinator. --

The paragraph on Page 7, lines 8 - 15 has been amended as follows:

-- Wireline network interface 200 can comprise an Ethernet, token ring or other any other local area network (LAN) interface known in the art. In the preferred embodiment of the present invention, network adapter 101 incorporates a single wireline network interface 200. However, as will be apparent to those skilled in the art, alternative embodiments of the present invention can

include multiple wireline network interfaces, each connecting the adapter 101 to a different LAN.

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The paragraph on Page 7, lines 16 - 23 has been amended as follows:

-- Wireless network interface 201 can comprise an Ethernet connection, serial cable, RS232 or other cable connection to a wireless access point 100. Preferably, network adapter 101 incorporates a single wireless network interface 201. However, as will be apparent to those skilled in the art, alternative embodiments of the present invention can include multiple wireless network interfaces, each connecting the adapter 101 to a different wireless access point 100. (See FIGS. 5 - 7, for example.) --

The paragraph which begins on Page 7, line 24 and carries over to Page 8, line 2 has been amended as follows:

-- Network coordination software 202 is provided for communicating with the network control server 103 to provide coordination functions on behalf of the adapted access points 100 within the managed network environment. In the preferred embodiment of the present invention, the network coordination software 202 enables the adapter to retrieve [retrieval of] network security and quality-of-service policies, retrieve [retrieval of] packet rewriting rules, transmit [transmission of] logs and alerts, and disseminate [dissemination of] information pertaining to device arrival and departure. Furthermore, the software receives management commands that are forwarded to the access point itself. --

The paragraph on Page 8, lines 19 - 32 has been amended as follows:

-- In an alternate embodiment of the present invention, the augmented IP stack 203 includes support for a mobile IP Foreign Agent (FA). The mobile IP protocol is defined in RFC 2002, available on the Internet at www.rfc-editor.org. In a further alternate embodiment of the present invention, the augmented IP stack includes services that detect and handle packets corresponding to various standard protocols such as the Domain Name Service (DNS) protocol, Dynamic Host Configuration Protocol (DHCP), Remote Authentication Dial-In User Service (RADIUS) protocol, and Internet Group Management Protocol (IGMP). The augmented IP stack, upon detecting a packet corresponding to one of these services, may filter the packet, forward the packet or generate a response in accordance with the policies within the managed network environment. --

The paragraph on Page 10, lines 6 - 28 has been amended as follows:

-- Referring now to FIG. 5, the adapter 101 is illustrated connected to a plurality of access points 100 via a switch 500. In an alternative embodiment of the present invention, adapter 101 provides services to a plurality of short-range wireless access points 100. In this environment, a plurality of short-range wireless access points 100 are individually coupled to switch 500. Although FIG. 5 depicts each access point 100 located on a dedicated segment connected to the switch 500, it will be apparent to those skilled in the art that a single LAN segment can contain multiple wireless access points. Adapter 101 is also attached to switch 500. In this embodiment, the adapter's wireline and wireless interfaces are preferably integrated into a single connection 503 of switch 500. In one implementation of this embodiment, the switch 500

is programmed to automatically forward all inbound packets originating from access point LAN segments [501] 501a, 501b, 501c (for example) to the LAN segment 503 containing the adapter 101. The switch 500 is also programmed to automatically forward all packets not originating from the LAN segment 503 containing the adapter (e.g., originating from LAN 102 and arriving via segment 502) and destined to an access point LAN segment 501, to the LAN segment 503 containing the adapter 101. In this manner, the adapter 101 can receive and process all packets originating from and destined to the access points 100. --

The paragraph which begins on Page 10, line 29 and carries over to Page 11, line 3 has been amended as follows:

-- Referring now to FIG. 6, in a further alternate embodiment of the present invention, adapter 101 supports a plurality of switched LANs [102] 500, at least some of which contain wireless access points. In FIG. 6, adapter 101 is shown connected to three switched LANs containing wireless access points. This is merely for illustrative purposes; obviously, the number of LANs and access points can vary. --

The paragraph on Page 11, lines 4 - 13 has been amended as follows:

-- A plurality of short-range wireless access points 100 provided are coupled to each switch 500. There are three access point LANs and the switch 500 of each LAN is connected to the wireless network interface of [each] an adapter 101. The wired network interface of the adapter is connected to a pair of wired LANs 102. One or more personal computers (PCS) 600 are provided connected to each of the wired LANs. In this case, the adapter 101 receives packets

sent to or from access points [situated in] connected to all three switches 500. Moreover, the adapter is able to process packets sent to or from multiple wired networks 102. --

The paragraph on Page 11, lines 14 - 21 has been amended as follows:

-- [Although not preferred, the] The access points 100 [of] or wireless clients may be programmed to forward all wireline-destined packets to the adapter 101 by defining the destination media access control (MAC) address to be that of the adapter. For example, the access points 100 can be programmed to treat the adapter 101 as a default IP gateway for network traffic. [Though this accomplishes the same effect as the first implementation, it is more complex to implement and manage, and therefore less desirable.] --

The paragraph on Page 11, lines 22 - 25 has been amended as follows:

-- In an alternate implementation of [this embodiment] the present invention, the network control server 103 can be co-located with the adapter 101 to reduce the quantity of servers necessarily installed in the network environment, and to reduce the overall system cost. --

The paragraph on Page 12, lines 3 - 8 has been amended as follows:

-- Referring now to FIG. 7, the adapter 101 is illustrated connected to [a] access points 100 which are connected to [via] multiple different wireless networks. These different wireless networks can employ the same network technology, in which case they have distinguished network identifiers, or they can employ different network technologies such as 802.11 and Bluetooth. --

The paragraph on Page 12, lines 9 - 15 has been amended as follows:

-- Access points 100 from different wireless networks are connected to an adapter 101 wireless network interface. The adapter wired network interface is connected to the wired Local Area Network 102. It is to be understood that in alternative embodiments, the adapter can be connected to different wireless networks through a plurality of switches, as previously described with respect to FIG. 5 and FIG. 6. --

In the Claims:

Claim 11 has been amended as follows:

- 1 11. (Once amended) A system as recited in claim 1 wherein said means for communicating
2 [with a plurality of Network Control Servers] further comprises [a] network coordination
3 software.

Claim 16 has been amended as follows:

- 1 16. (Once amended) A system as recited in claim 14 wherein said switch is programmable to
2 automatically forward all packets not originating from [the] a LAN segment containing the
3 network adapter and destined to an access point segment, to the LAN segment containing said
4 network adapter.

Claim 17 has been amended as follows:

- 1 17. (Once amended) A system as recited in claim 14 wherein the access points or [the]

2 wireless clients are programmed to forward all packets to [the] said network adapter.

Claim 18 has been amended as follows:

1 18. (Once amended) A system as recited in claim 1 wherein said [Network Control Server]
2 network control server is co-located with said network adapter.

Claim 19 has been amended as follows:

1 19. (Once amended) A system as recited in claim 1 wherein said [Network Control Server]
2 network control server is co-located with a Core Server.

Claim 20 has been amended as follows:

1 20. (Once amended) A system as recited in claim 1 wherein said [Network Control Server]
2 network control server is co-located with a Routing Coordinator.

Claim 23 has been amended as follows:

1 23. (Once amended) A system as recited in claim 1 wherein said [Network Control Sever]
network control server is distributed over said wired network.

Claim 33 has been amended as follows:

1 33. (Once amended) A method as recited in claim 27, further comprising the step of
2 determining an access point currently associated with a mobile client by inspecting a media access
3 control (MAC) address associated with packets transmitted by [a] the mobile client.



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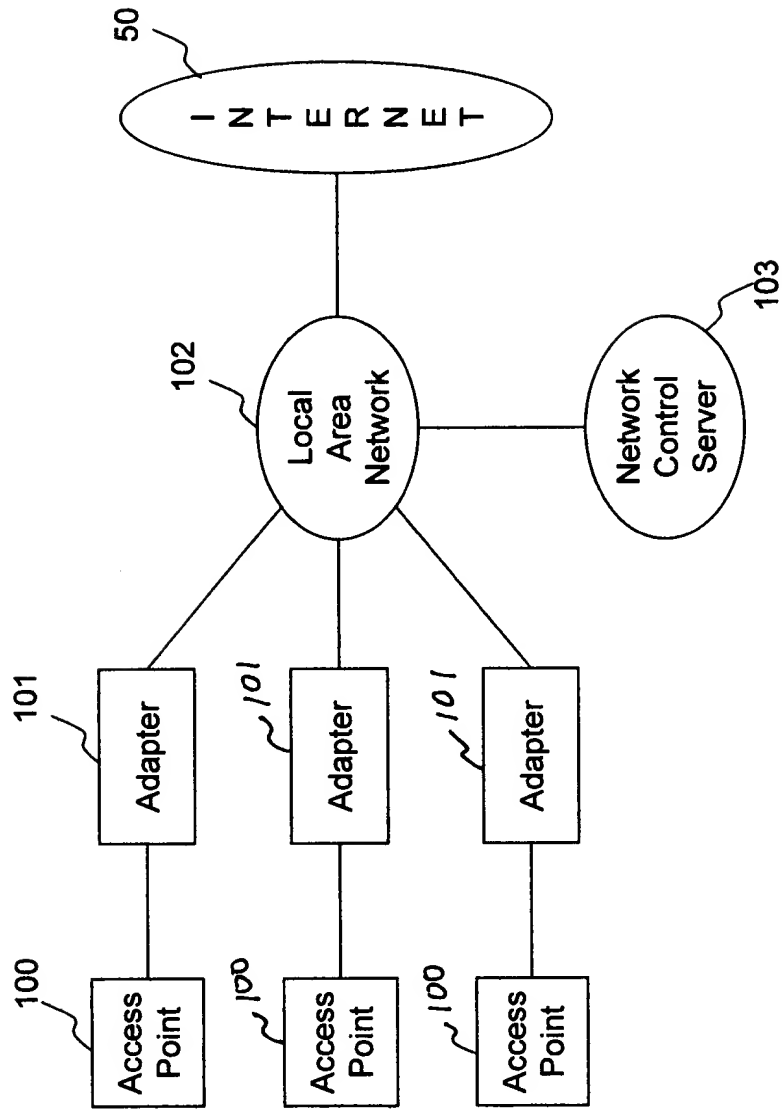


FIG. 1



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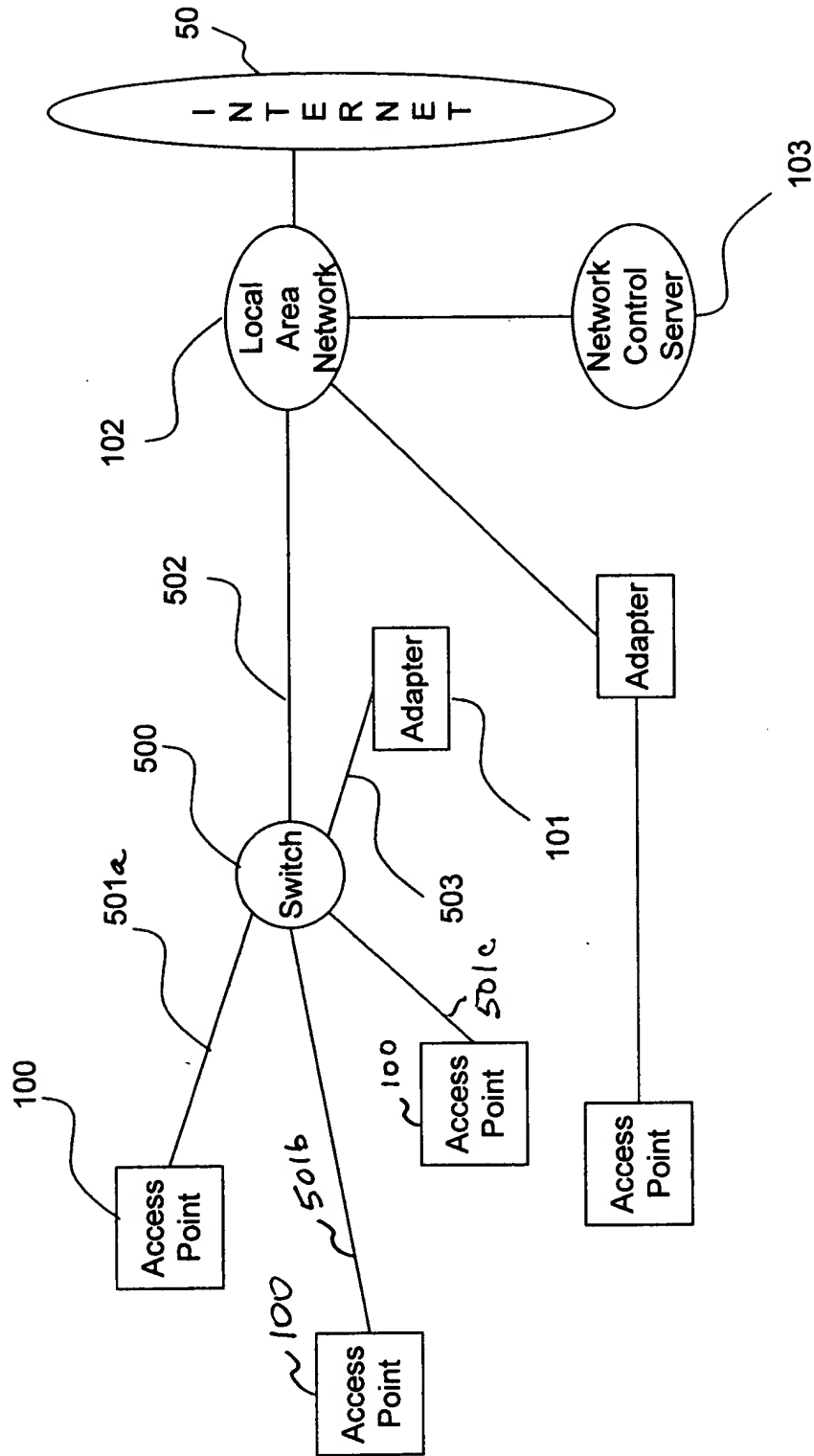


FIG. 5

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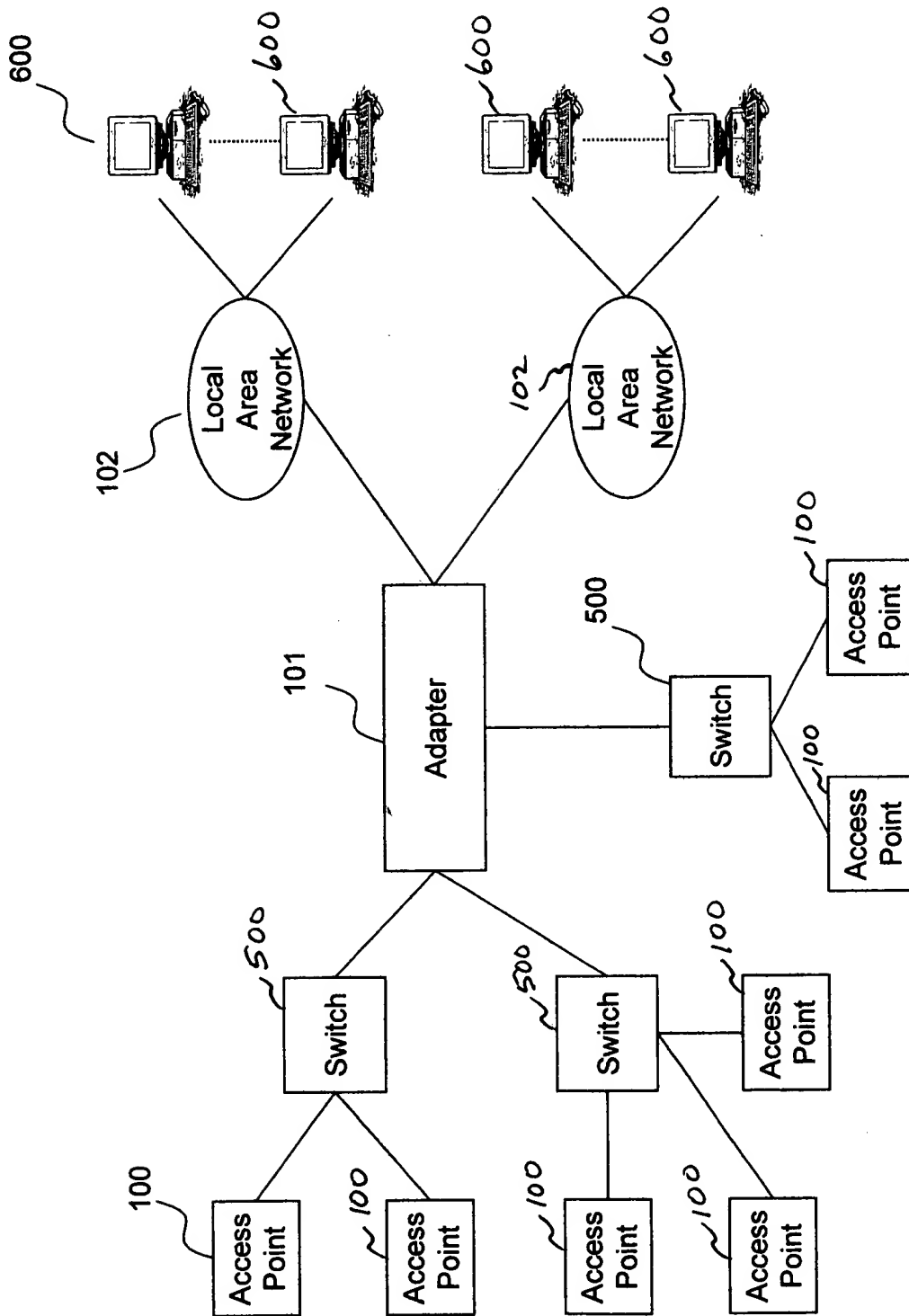


FIG. 6

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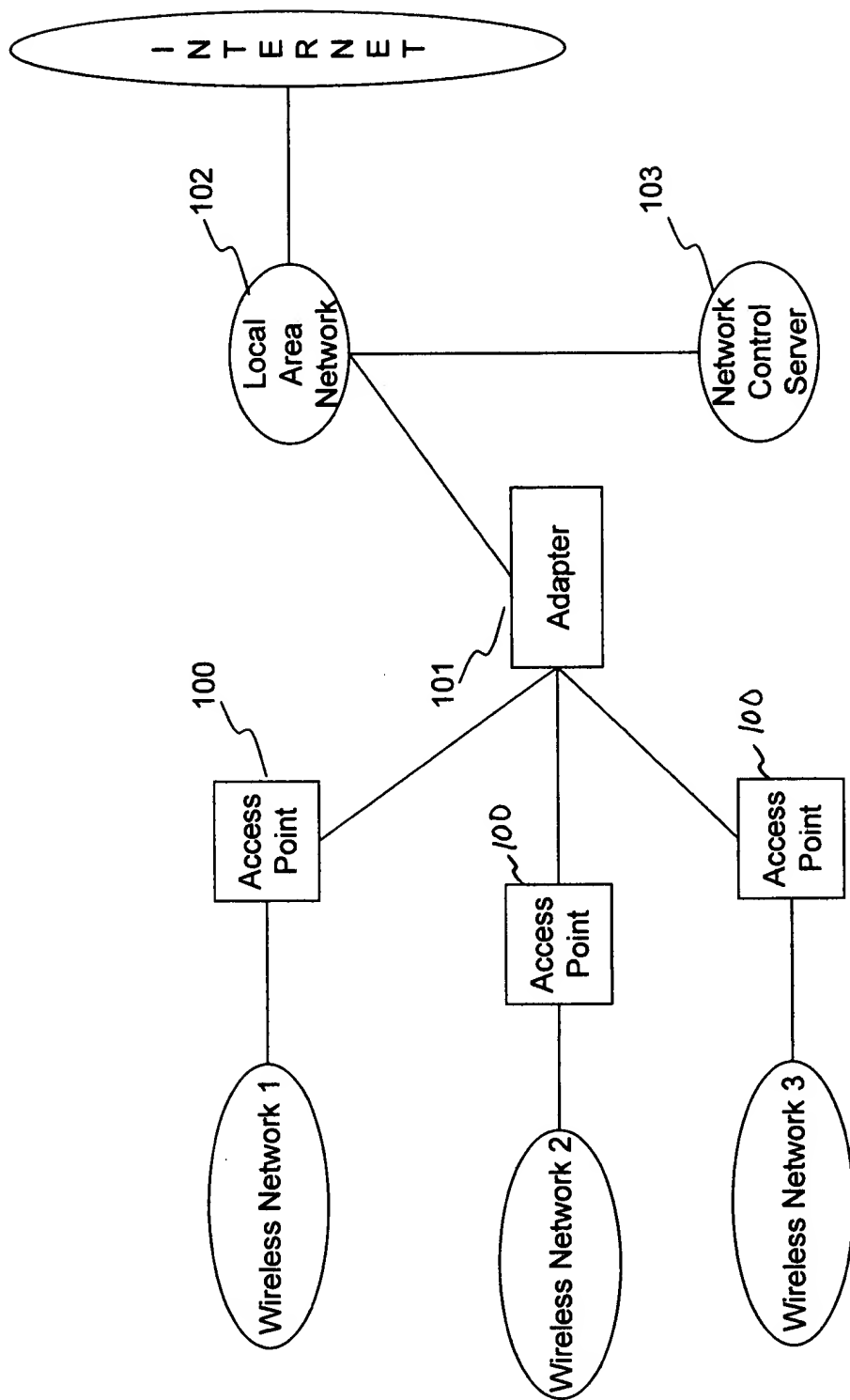


FIG. 7